WE CLAIM:

1.   A method in a computer system for generating an image for producing a design for a container, the method comprising the steps of:

generating a virtual sculptural relief;

projecting said virtual sculptural relief onto a virtual container surface, said virtual container surface corresponding to a non-open region of the container;

manipulating said virtual sculptural relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface;

modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief by drawing curves on said virtual container surface;

flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generating a new virtual sculptural relief from said image; and

reprojecting said new virtual sculptural relief onto said non-open region of said virtual container to obtain the design for the container.

2.   The method of claim 1, wherein generating the virtual sculptural relief comprises the steps of:

creating said virtual container surface;

drawing a boundary image on said virtual container surface;

flattening said boundary image onto a plane to create a projected boundary image; and

transforming the projected boundary image into the virtual sculptural relief.

3.   The method according to claim 1, further comprising the step of converting said virtual sculptural relief into a numerical control language.

4.   The method according to claim 1, wherein said drawing curves comprises drawing bspline curves in 3 dimensions (3D).

5.   The method according to claim 1, further comprising the step of removing the virtual container surface by triangulating said virtual projected sculptural relief.

6.   The method of claim 5, further comprising the step of displaying a combined triangulated virtual projected sculptural relief and virtual container, which together form an image of the container.

7.   The method of claim 1, wherein said non-open region comprises a handle region.

8.   The method of claim 7, wherein said handle region comprises a handle and an interior handle surface.

9.   The method of claim 1, wherein said manipulating step comprises at least one of rotating at least a portion of said virtual relief, extending at least a portion of said virtual sculptural relief, contracting at least a portion of said virtual sculptural relief, and bending at least a portion of said virtual sculptural relief.

10.   The method of claim 1, further comprising the step of generating a two-dimensional shape prior to the step of generating said virtual sculptural relief, wherein said virtual sculptural relief is generated from the two-dimensional shape.

11.   The method of claim 1, further comprising the step of transferring said design to a machine code suitable for making a mold.

12.   A method of making a mold part for a container comprising the steps of:

designing an image for a container including the steps of:

generating a virtual sculptural relief design;

projecting the virtual sculptural relief onto a virtual container surface, said virtual container surface corresponding to a non-open region of said container;

manipulating said relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface;

modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief including drawing curves on said virtual container surface;

flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generating a new virtual sculptural relief from said image;

reprojecting said new virtual sculptural relief onto said non-open region of said virtual container to obtain the design for the container; and

tooling a mold for the container having the design.

13. The method of claim 12, further comprising the step of finishing said mold by hand tooling.

14. The method of claim 12, further comprising the step of converting the virtual sculptural relief into a numerical control language.

15. The method of claim 14, wherein the numerical control language is a computer file format usable by a tooling shop.

16. The method according to claim 14, further comprising the step of using the numerical control language to machine tool a mold having the sculptural relief designed therein.

17. A computer system for generating an image for producing a design for a container, the computer system comprising:

input means for providing a virtual sculptural relief;

projecting means for projecting the virtual sculptural relief onto a virtual container surface, said virtual container surface corresponding to a non-open region of said container;

manipulating means for manipulating said relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface;

modifying means for modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief by drawing curves on said virtual container surface;

flattening means for flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generation means for generating a new virtual sculptural relief from said image; and

reprojecting means for reprojecting said new virtual sculptural relief onto said non-open region of said virtual container to obtain the design for the container.

18.   The computer system according to claim 17, further comprising displaying means for displaying the combined virtual projected sculptural relief and virtual container.

19.   The computer system according to claim 17, further comprising converting means for converting the virtual relief into a numerical control language.

20.   The computer system according to claim 19, wherein the numerical control language is a computer file format usable by a tooling shop.

21.   The computer system according to claim 19 further comprising inputting numerical data from said converting means into tooling software for making a mold.

22.   An computer system for generating an image for producing a design for a container, the computer system comprising:

input means for providing a virtual sculptural relief;

projecting means for projecting the virtual sculptural relief onto a virtual container surface, said virtual container surface corresponding to a non-open region of said container;

displaying means for displaying the virtual sculptural relief and virtual container;

manipulating means for manipulating said relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface;

modifying means for modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief by drawing curves on said virtual container surface;

flattening means for flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generating means for generating a new virtual sculptural relief from said image; and

reprojecting means for reprojecting said new virtual sculptural relief onto said non-open region of said virtual container to obtain the design on the container.

and

converting means for converting at least one of the virtual sculptural relief and the virtual projected sculptural relief into a numerical control language.

23.   A method of making a container with a relief design thereon, the method including the steps of:

designing an image for a container including the steps of:

generating a virtual sculptural relief design;

projecting the virtual sculptural relief onto a virtual container surface, said virtual container surface corresponding to a non-open region of said container;

manipulating said relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface; and

modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief including drawing curves on said virtual container surface;

flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generating a new virtual sculptural relief from said image;

reprojecting said new virtual sculptural relief onto said non-open region of said virtual container surface to obtain the design for the container; and

tooling a mold for the container having the design; and

molding the container in said mold from a material.

24.   The method of claim 23, wherein said molding step comprises at least one of injection blow-molding, stretch blow-molding, and extrusion blow-molding.

25.   The method of claim 23, wherein said material is a plastic.

26.   The method of claim 25 wherein the plastic is polyethylene terephthalate.

27.   The method of claim 25, wherein the plastic is selected from nylon; polyolefins; and polyesters.

28.   The method of claim 27, wherein the polyolefins are selected from polypropylene, high density polyethylene and low density polyethylene.

29.   A container having a relief thereon, said relief designed by the method of claim 1.

30.   A container having a relief thereon, said container made from a mold prepared according to the method of claim 12.

31.   A container having a relief thereon, said container made by the method of claim 23.

32.   A method for generating an image for producing a design for a container, the method comprising the steps of:

creating a virtual projected sculptural relief on a virtual container surface;

modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief comprising:

drawing curves on said virtual container surface;

flattening said boundary-modified virtual projected sculptural relief into an image on a plane;

generating a new virtual sculptural relief from said image; and

reprojecting said new virtual sculptural relief onto said virtual container surface to obtain the design for the container.

33. The method according to claim 32, wherein said creating step comprises:

generating a virtual sculptural relief;

projecting said virtual sculptural relief onto said virtual container surface, said virtual container surface corresponding to a non-open region of the container; and

manipulating said virtual sculptural relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface.

34. The method according to claim 32, wherein said drawing curves comprises drawing bspline curves in 3 dimensions (3D).

35. A method in a computer system for generating an image for producing a design for a container, the method comprising the steps of:

creating a virtual container surface, said virtual container surface corresponding to a non-open region of the container;

drawing a boundary image on said virtual container surface;

flattening said boundary image onto a plane to create a projected boundary image;

transforming said projected boundary image into a virtual sculptural relief;

projecting said virtual sculptural relief onto said virtual container surface; and

manipulating said virtual sculptural relief in three-dimensional space to provide a virtual projected sculptural relief on said non-open region of said virtual container surface to obtain the design of the container.

36. The method of claim 35, further comprising the step of:

modifying a boundary of said virtual projected sculptural relief into a boundary-modified virtual projected sculptural relief including drawing curves on said virtual container surface.